

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Edouard Garcia (Reg # 38,461) on 8/4/08.

IN THE CLAIMS:

See attached sheet, pages 2-15.

Claim 25, line 1, change "24" to - - 1 - -.

Claims 64-65, line1, change "59" to - - 58 - -.

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Attorney's Docket No.: 200310865-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Huitao Luo
Serial No. : 10/653,021
Filed : August 29, 2003
Title : SYSTEMS AND METHODS OF DETECTING AND CORRECTING REDEYE
IN AN IMAGE SUITABLE FOR EMBEDDED APPLICATIONS

Art Unit : 2624
Examiner : Chawan, Sheela C
Confirmation No.: 2093

Commissioner for Patents
P.O. Box 1450
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PROPOSED AMENDMENT

Claim 1 (currently amended): A method of processing an input image, comprising:
sub-sampling the input image to generate a thumbnail image comprising a reduced-size
version of the input image in its entirety; ~~and~~
detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas
comprises determining measures of pixel redness in the thumbnail image, and identifying a first
set of candidate redeye pixel areas based on the determined pixel redness measures;
correcting redeye in a version of the input image based on the redeye pixel areas detected
in the thumbnail image to produce a corrected version of the input image; and
producing an output image from the corrected version of the input image.

Claim 2 (canceled): ~~The method of claim 1, wherein detecting redeye pixel areas~~
~~comprises computing measures of pixel redness in the thumbnail image, and identifying a~~
~~preliminary set of candidate redeye pixel areas based on the computed pixel redness measures.~~

Claim 3 (currently amended): The method of claim ~~2~~1, wherein pixel redness measures
are ~~computed~~ determined based on a ratio of a measure of a red component of pixel energy to a
measure of total pixel energy.

Claim 4 (currently amended): The method of claim ~~2~~1, wherein identifying the
~~preliminary~~ first set of candidate redeye pixel areas comprises applying a two-dimensional

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redness filter to the ~~computed~~determined pixel redness measures, wherein the redness filter is operable to ~~compute~~determine for each region of the thumbnail image a respective redness score based on a comparison of an average of ones of the pixel redness measures in a central kernel pixel area of the thumbnail image and an average of the pixel redness measures in a pixel area of the thumbnail image surrounding the kernel pixel area.

Claim 5 (currently amended): The method of claim 4, further comprising applying a prescribed threshold to the ~~computed~~determined redness scores to identify candidate redeye pixels.

Claim 6 (original): The method of claim 5, wherein detecting redeye pixel areas further comprises segmenting redeye pixels by scanning a redness map of the redness measures in stripes of one or more pixel lines and tracking objects containing candidate redeye pixels connected across stripes.

Claim 7 (currently amended): The method of claim 4, wherein detecting redeye pixel areas further comprises filtering from the ~~preliminary~~first set each candidate redeye pixel area having a ~~computed~~determined redness contrast relative to at least one respective neighboring pixel area less than a prescribed redness contrast threshold.

Claim 8 (currently amended): The method of claim 7, wherein each candidate redeye pixel area having a ~~computed~~determined redness contrast relative to each of a set of corresponding surrounding pixel areas less than the prescribed redness contrast threshold is filtered from the ~~preliminary~~first set.

Claim 9 (currently amended): A method of processing an input image, comprising:
sub-sampling the input image to generate a thumbnail image; ~~and~~
detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas comprises ~~computing~~determining measures of pixel redness in the thumbnail image, and identifying a ~~preliminary~~first set of candidate redeye pixel areas based on the ~~computed~~

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determined pixel redness measures, wherein identifying the ~~preliminary~~first set of candidate redevye pixel areas comprises enlarging a given candidate redevye pixel area having a dimension below a threshold size to generate an enlarged pixel area;
correcting redevye in a version of the input image based on the redevye pixel areas detected in the thumbnail image to produce a corrected version of the input image; and
producing an output image from the corrected version of the input image.

Claim 10 (currently amended): The method of claim 9, wherein identifying the ~~preliminary~~first set of candidate redevye pixel areas comprises comparing the enlarged pixel area to multiple pixel areas surrounding the enlarged pixel area, and selecting a pixel area to replace the given candidate redevye pixel area from among the enlarged pixel area and the surrounding pixel areas based on measures of redness ~~computed~~determined for each of the enlarged pixel area and the surrounding pixel areas.

Claim 11 (currently amended): The method of claim ~~21~~1, wherein detecting redevye pixel areas further comprises filtering from the ~~preliminary~~first set each candidate redevye pixel area located in an area of the digital image having a ~~computed~~determined grayscale contrast relative to at least one respective neighboring pixel area less than a prescribed grayscale contrast threshold.

Claim 12 (currently amended): The method of claim 11, further comprising:
~~computing~~determining measures of pixel grayscale in the digital image;
~~determining~~computing, for a given candidate redevye pixel area, a candidate iris area centered at the given candidate redevye pixel area and having a size maximizing grayscale contrast between the candidate iris area and areas surrounding the candidate iris area;
~~determining~~computing a measure of grayscale contrast between the candidate iris area and at least a portion of the areas surrounding the candidate iris area;
and applying a threshold to the determined ~~computed~~ grayscale contrast measure to filter candidate redevye pixel areas from the ~~preliminary~~first set.

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Claim 13 (currently amended): The method of claim ~~21~~, further comprising:
identifying a pixel boundary of a pixel region surrounding a given candidate redeye pixel area;
classifying pixels within the pixel boundary as red pixels and non-red pixels by applying a threshold to the ~~computed~~ determined pixel redness measures; and
filtering the given candidate redeye pixel area from the ~~preliminary~~ first set when a set of contiguous red pixels extends from the given candidate redeye pixel area to the pixel boundary.

Claim 14 (original): The method of claim 13, further comprising identifying the set of contiguous pixels by scanning a redness map of the redness measures in stripes of one or more pixel lines and tracking objects containing red pixels connected across stripes.

Claim 15 (currently amended): The method of claim ~~21~~, further comprising filtering candidate redeye pixel areas from the ~~preliminary~~ first set based on proportions of detected skin tone pixels in regions respectively surrounding the candidate redeye pixels areas.

Claim 16 (currently amended): The method of claim ~~21~~, further comprising pairing candidate redeye pixel areas in the ~~preliminary~~ first set, and filtering unpaired candidate redeye pixels areas from the ~~preliminary~~ first set.

Claim 17 (currently amended): The method of claim 16, wherein pairing candidate redeye pixel areas comprises comparing a candidate texture pattern ~~computed~~ determined for a candidate pair of candidate redeye pixel areas in the ~~preliminary~~ first set with a reference texture pattern.

Claim 18 (currently amended): A method of processing an input image, comprising:
sub-sampling the input image to generate a thumbnail image;
detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas comprises
determining ~~computing~~ measures of pixel redness in the thumbnail image, ~~and~~

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identifying a ~~preliminary~~first set of candidate redeye pixel areas based on the
~~computed-determined~~ pixel redness measures;
pairing candidate redeye pixel areas in the ~~preliminary~~first set, wherein pairing
candidate redeye pixel areas comprises comparing a candidate texture
pattern ~~computed-determined~~ for a candidate pair of candidate redeye
pixel areas in the ~~preliminary~~first set with a reference texture pattern,
wherein comparing the candidate texture pattern with the reference texture
pattern comprises generating a feature vector representative of the
candidate texture pattern and comparing the generated feature vector with
a statistical model of the reference texture pattern; and
filtering unpaired candidate redeye pixels areas from the ~~preliminary~~first set;
correcting redeye in a version of the input image based on the redeye pixel areas detected
in the thumbnail image to produce a corrected version of the input image; and
producing an output image from the corrected version of the input image.

Claim 19 (original): The method of claim 18, wherein generating the feature vector representative of the candidate texture pattern comprises mapping a candidate redeye pair region encompassing the candidate redeye pair to a standardized candidate redeye pair template.

Claim 20 (original): The method of claim 19, wherein mapping the candidate redeye pair region comprises cropping a pixel region from a grayscale map of the thumbnail image, rotating the cropped pixel region, and scaling the rotated pixel region.

Claim 21 (original): The method of claim 20, wherein mapping the candidate redeye pair region comprises normalizing and equalizing the scaled pixel region.

Claim 22 (original): The method of claim 19, wherein generating the feature vector representative of the candidate texture pattern comprises converting the mapped candidate redeye pair region to the feature vector.

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Claim 23 (original): The method of claim 1, further comprising detecting redeye pixel areas in the input image, and generating a set of detected redeye pixel areas by merging redeye pixel areas detected in the input image with redeye pixel areas detected in the thumbnail image.

Claim 24 (canceled): ~~The method of claim 1, further comprising correcting redeye in the input image based on redeye pixel areas detected in the thumbnail image.~~

Claim 25 (currently amended): The method of claim 24, wherein the correcting redeye comprises mapping the detected redeye pixel areas to the version of the input image.

Claim 26 (currently amended): The method of claim 25, wherein the correcting redeye comprises enlarging redeye pixel areas mapped to the version of the input image.

Claim 27 (original): The method of claim 26, wherein the mapped redeye pixel areas are enlarged by amounts decreasing inversely with respect to original sizes of the mapped redeye pixel areas.

Claim 28 (original): The method of claim 26, further comprising cropping corners from each of the enlarged redeye pixel areas.

Claim 29 (currently amended): The method of claim 25, further comprising classifying pixels as redeye pixels for correction before mapping detected redeye pixel areas to the version of the input image.

Claim 30 (currently amended): A method of processing an input image, comprising:
sub-sampling the input image to generate a thumbnail image;
detecting redeye pixel areas in the thumbnail image; ~~and~~
correcting redeye in a version of the input image based on redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image, wherein correcting redeye comprises identifying discrete redeye pixel areas separated from eyelid regions; and

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producing an output image from the corrected version of the input image.

Claim 31 (original): The method of claim 30, wherein identifying discrete redeye pixel areas comprises comparing at least one redeye pixel area size dimension to a threshold.

Claim 32 (original): The method of claim 31, wherein a discrete redeye pixel area is identified based at least in part on a prescribed fraction of a respective grayscale iris area centered at a corresponding pixel area and having a size maximizing grayscale contrast between the grayscale iris area and areas surrounding the grayscale iris area.

Claim 33 (original): The method of claim 30, wherein correcting redeye comprises classifying pixels in each non-discrete redeye pixel area based on skin tone coloration.

Claim 34 (previously presented): The method of claim 26, wherein the correcting comprises classifying pixels in each of the mapped redeye pixel areas based on a redness threshold.

Claim 35 (previously presented): The method of claim 26, wherein the pixels in each of the mapped redeye pixel areas are classified on a pixel-by-pixel basis.

Claim 36 (previously presented): The method of claim 26, wherein each pixel in the mapped redeye pixel areas is classified with reference to an adjacent, previously-classified pixel.

Claim 37 (currently amended): A method of processing an input image, comprising:
sub-sampling the input image to generate a thumbnail image;
detecting redeye pixel areas in the thumbnail image; ~~and~~
correcting redeye in a version of the input image based on redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image, wherein correcting redeye comprises classifying pixels between concentric inner and outer bounding regions based on a grayscale threshold; and

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producing an output image from the corrected version of the input image.

Claim 38 (original): The method of claim 37, further comprising correcting original color values of pixels in a redeye pixel correction region encompassing pixels classified as redeye pixels.

Claim 39 (original): The method of claim 38, wherein original color values of pixels in the redeye pixel correction region are corrected by desaturating original color values.

Claim 40 (currently amended): The method of claim 39, wherein the desaturating comprises desaturating original color values ~~are desaturated~~ by respective amounts varying with pixel location in the final pixel mask.

Claim 41 (currently amended): The method of claim 39, wherein the correcting comprises darkening original color values of pixels in the redeye pixel correction region ~~are corrected by darkening the original color values.~~

Claim 42 (original): The method of claim 38, further comprising correcting original color values of pixels in a smoothing region surrounding the redeye pixel correction region.

Claim 43 (currently amended): The method of claim 42, wherein the correcting comprises correcting original color values of pixels in the smoothing region ~~are corrected~~ by an amount decreasing with distance from the given redeye pixel correction region.

Claim 44 (currently amended): The method of claim 43, wherein the correcting comprises correcting original color values of pixels in the redeye pixel correction region ~~are corrected~~ without reference to position within the redeye pixel correction region.

Claim 45 (currently amended): The method of claim 37, further comprising ~~computing~~ determining a size of the inner bounding region between a given redeye pixel area size and a

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corresponding grayscale iris area size, and ~~computing~~ determining a size of the outer bounding region larger than the ~~computed~~ determined size of the inner bounding region by a predetermined relative amount.

Claim 46 (currently amended): The method of claim 26, wherein the correcting comprises correcting original color values of pixels in the mapped redeye pixel areas ~~are corrected~~ based on integer arithmetic computations.

Claim 47 (original): The method of claim 1, further comprising correcting redeye in the thumbnail image based on redeye pixel areas detected in the thumbnail image.

Claim 48 (original): The method of claim 47, further comprising displaying the thumbnail image with corrected redeye, and correcting redeye in the input image based on redeye pixel areas detected in the thumbnail image in respond to a user command.

Claim 49 (currently amended): A method of processing an input image having lines of pixels with original color values, comprising:

detecting one or more redeye pixel areas corresponding to respective areas in the input image;

in a version of the input image, classifying each pixel ~~in the input image~~ corresponding to the detected redeye pixel areas as a redeye pixel or a non-redeye pixel on a line-by-line basis without reference to pixels in adjacent lines; ~~and~~

correcting the original color values of pixels ~~in the input image~~ classified as redeye pixels in the version of the input image to produce a corrected version of the input image; and
producing an output image from the corrected version of the input image.

Claim 50 (original): The method of claim 49, wherein a pixel in a given line is classified with reference to an adjacent, previously-classified pixel in the given line.

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Claim 51 (original): The method of claim 49, wherein correcting redeye comprises identifying discrete redeye pixel areas separated from eyelid regions.

Claim 52 (original): The method of claim 51, wherein identifying discrete redeye pixel areas comprises comparing at least one redeye pixel area size dimension to a threshold.

Claim 53 (original): The method of claim 52, wherein a discrete redeye pixel area is identified based at least in part on a prescribed fraction of a respective grayscale iris area centered at a corresponding pixel area and having a size maximizing grayscale contrast between the grayscale iris area and areas surrounding the grayscale iris area.

Claim 54 (original): The method of claim 51, wherein correcting redeye comprises classifying pixels in each non-discrete redeye pixel area based on skin tone coloration.

Claim 55 (original): The method of claim 49, wherein correcting redeye comprises classifying pixels in each redeye pixel area based on a redness threshold.

Claim 56 (original): The method of claim 49, further comprising correcting original color values of pixels classified as redeye pixels by desaturating original color values.

Claim 57 (original): The method of claim 49, further comprising correcting original color values of pixels classified as redeye pixels by darkening the original color values.

Claim 58 (currently amended): A system for processing an input image, comprising a ~~redeye detection module operable to~~computing hardware operable to perform operations comprising:

~~sub-sample~~sub-sampling the input image to generate a thumbnail image comprising reduced-size versions of all regions of the input image; ~~and~~

~~detect~~detecting redeye pixel areas in the thumbnail image, ~~wherein in the detecting the~~computing hardware is operable to perform operations comprising determining measures of pixel

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redness in the thumbnail image, and identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures;
correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image.

Claim 59 (canceled): ~~The system of claim 58, wherein the redeye detection module computes measures of pixel redness in the thumbnail image and identifies a preliminary set of candidate redeye pixel areas based on the computed pixel redness measures.~~

Claim 60 (currently amended): The system of claim ~~59~~58, wherein the computing hardware is operable to perform operations comprising applying~~redeye detection module applies~~ a two-dimensional redness filter to the ~~computed~~ determined pixel redness measures, wherein the redness filter is operable to ~~compute~~ determine a redness score based on a central kernel pixel area and a pixel area surrounding the kernel pixel area.

Claim 61 (currently amended): A system for processing an input image, comprising computing hardware operable to perform operations comprising~~a redeye detection module operable to:~~
sub-sample~~sub-sampling~~ the input image to generate a thumbnail image; ~~and~~
detect~~detecting~~ redeye pixel areas in the thumbnail image, wherein in the detecting the computing hardware is operable to perform operations comprising determining~~redeye detection module computes~~ measures of pixel redness in the thumbnail image, ~~identifies~~ identifying a ~~preliminary~~ first set of candidate redeye pixel areas based on the ~~computed~~ determined pixel redness measures, and ~~enlarges~~ enlarging a given candidate redeye pixel area having a dimension below a threshold size to generate an enlarged pixel area; and
correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image.

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Claim 62 (currently amended): A system for processing an input image, comprising
computing hardware operable to perform operations comprising a red-eye detection module
operable to:
 ~~sub-sample~~sub-sampling the input image to generate a thumbnail image; and
 ~~detect~~detecting red-eye pixel areas in the thumbnail image, wherein in the detecting the
computing hardware is operable to perform operations comprising determining red-eye detection
module computes measures of pixel redness in the thumbnail image, ~~identifies~~identifying a
~~preliminary~~first set of candidate red-eye pixel areas based on the ~~computed~~determined pixel
redness measures, and ~~filters~~filtering from the ~~preliminary~~first set each candidate red-eye pixel
area located in an area of the digital image having a ~~computed~~determined grayscale contrast
relative to at least one respective neighboring pixel area less than a prescribed grayscale contrast
threshold;
 correcting red-eye in a version of the input image based on the red-eye pixel areas detected
in the thumbnail image to produce a corrected version of the input image.

Claim 63 (currently amended): A system for processing an input image, comprising
computing hardware operable to perform operations comprising a red-eye detection module
operable to:
 ~~sub-sample~~sub-sampling the input image to generate a thumbnail image;
 ~~detect~~detecting red-eye pixel areas in the thumbnail image, wherein in the detecting the
computing hardware is operable to perform operations comprising
 determining red-eye detection module computes measures of pixel redness in the
 thumbnail image, ~~identifies~~
 identifying a preliminary first set of candidate red-eye pixel areas based on the
 ~~computed~~determined pixel redness measures, and the red-eye detection
 module is further operable to:
 ~~identify~~identifying a pixel boundary of a pixel region surrounding a given
 candidate red-eye pixel area;

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~~classify~~ classifying pixels within the pixel boundary as red pixels and non-red pixels by applying a threshold to the ~~computed~~ determined pixel redness measures; and
~~filter~~ filtering the given candidate redeye pixel area from the ~~preliminary~~ first set when a set of contiguous red pixels extends from the given candidate redeye pixel area to the pixel boundary; and
correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image.

Claim 64 (currently amended): The system of claim 59, wherein the computing hardware operable to perform operations comprising filtering ~~redeye detection module filters~~ candidate redeye pixel areas from the ~~preliminary~~ first set based on proportions of detected skin tone pixels in regions respectively surrounding the candidate redeye pixels areas.

Claim 65 (currently amended): The system of claim 59, wherein the computing hardware operable to perform operations comprising pairing ~~redeye detection module pairs~~ candidate redeye pixel areas in the ~~preliminary~~ first set and filters unpaired candidate redeye pixels areas from the ~~preliminary~~ first set.

Claim 66 (currently amended): The system of claim 58, wherein the computing hardware operable to perform operations comprising detecting ~~redeye detection module detects~~ redeye pixel areas in the input image and generates a set of detected redeye pixel areas by merging redeye pixel areas detected in the input image with redeye pixel areas detected in the thumbnail image.

Claim 67 (canceled): ~~The system of claim 58, further comprising a redeye correction module operable to correct redeye in the input image based on redeye pixel areas detected in the thumbnail image.~~

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Claim 68 (currently amended): A system for processing an input image having lines of pixels with original color values, comprising computing hardware operable to perform operations comprising:

- a ~~redeye detection module operable to detect~~detecting one or more redeye pixel areas corresponding to respective areas in the input image; ~~and~~
- a ~~redeye correction module operable to classify~~classifying each pixel in the input image corresponding to the detected redeye pixel areas as a redeye pixel or a non-redeye pixel on a line-by-line basis without reference to pixels in adjacent lines; ~~and~~
- ~~to correct~~correcting the original color values of pixels in the input image classified as redeye pixels to produce a corrected version of the input image.

Response to Amendment

2. Applicant's amendment filed on 5/12/08 has been entered.
- Claims 2, 24, 59 and 67 are cancel claims.
- Claims 1, 3- 23, 25- 58, 60-66 and 68 are pending in the application.

Response to Arguments

3. Applicant's arguments see page 14-17 of the remarks filed on 5/12/08, with respect to rejection of claims 1 and 58 under 102(e) has been fully considered and are persuasive. The prior art rejection has been withdrawn and claims 1, 3 - 23, 25- 58, 60- 66 and 68 are allowed.

Reasons For Allowance

4. The following is an examiner's statement of reasons for allowance:

Claims 1, 3 - 23, 25- 58, 60-66 and 68 are allowed and renumbered as 1- 64.

Applicant's arguments see page 14-17 of the remarks filed on 5/12/08. The prior art of record Meckes (2003/0044063) discloses that images are screened using certain exclusion criteria before redeyes are detected in the images and that a subsequent red-eye defect detection process is performed only those images that do not satisfy the exclusion criteria. Meckes fails to "detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas comprises determining measures of pixel redness in the thumbnail image, and identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures, correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image,

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and producing an output image from the corrected version of the input image, as recited in claim 1 and 58 the prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious.

Regarding claim 9, Applicant's arguments, see page 17, lines 26- 29 of the remarks, filed 4/24/07. The prior art of record Schildkraut (US.6,292,574) discloses the process of determining those skin sub-maps that have an acceptable degree of fit to an ellipse with an acceptable aspect ratio and the process of computing a resize factor for resizing the sub-color-regions. Nowhere in the disclosure of Schildkraut teach "sub-sampling the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas comprises determining measures of pixel redness in the thumbnail image, and identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures, wherein identifying the first set of candidate redeye pixel areas comprises enlarging a given candidate redeye pixel area having a dimension below a threshold size to generate an enlarged pixel area, correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image ; and producing an output image from the corrected version of the input image." as recited in claim 9 . The prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claims 9 -10 have been withdrawn from the rejection and are allowed.

Regarding claim 18, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to teach “sub-sampling the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image, wherein detecting redeye pixel areas comprises determining measures of pixel redness in the thumbnail image, identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures, pairing candidate redeye pixel areas in the first set, wherein pairing candidate redeye pixel areas comprises comparing a candidate texture pattern determined for a candidate pair of candidate redeye pixel areas in the first set with a reference texture pattern, wherein comparing the candidate texture pattern with the reference texture pattern comprises generating a feature vector representative of the candidate texture pattern and comparing the generated feature vector with a statistical model of the reference texture pattern, and filtering unpaired candidate redeye pixels areas from the first set , correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image; and producing an output image from the corrected version of the input image.” as recited in claim 18. The prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claims 18-22 has been withdrawn from the rejection and is allowed.

Regarding claim 30, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to teach “sub-

sampling the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image; correcting redeye in a version of the input image based on redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image, wherein correcting redeye comprises identifying discrete redeye pixel areas separate from eyelid regions; and producing an output image from the corrected version of the input image.” as recited in claim 30. The prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claims 30- 33 has been withdrawn from the rejection and is allowed.

Regarding claim 37, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to teach “ sub-sampling the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image; and correcting redeye in a version of the input image based on redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image, wherein correcting redeye comprises classifying pixels between concentric inner and outer bounding regions based on a grayscale threshold: and producing an output image from the corrected version of the input image.” as recited in claim 37, The prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claims 37 – 42 and 45 has been withdrawn from the rejection and is allowed.

Regarding claims 49 and 68, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to

teach “detecting one or more redeye pixel areas corresponding to respective areas in the input image; in a version of the input image, classifying each pixel corresponding to the detected redeye pixel areas as a redeye pixel or a non-redeye pixel on a line-by-line basis without reference to pixels in adjacent lines; correcting the original color values of pixels classified as redeye pixels in the version of the input image to produce a corrected version of the input image; and producing an output image from the corrected version of the input image.” as recited in claims 49 and 68, the prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claims 49- 57 have been withdrawn from the rejection and are allowed.

Claim 58, is representative of claim 9 above.

Claim 61 is representative of claim 9 above.

Regarding claim 62, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to teach “ sub-sample the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image, wherein in the detecting the computing hardware is operable to perform operations comprising determining measures of pixel redness in the thumbnail image, identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures, and filtering from the first set each candidate redeye pixel area located in an area of the digital image having a determined grayscale contrast relative to at least one respective neighboring pixel area less than a prescribed grayscale contrast threshold, correcting redeye in a

version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image”. as recited in claim 61, the prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claim 62 has been withdrawn from the rejection and is allowed.

Regarding claim 63, the prior art of record Schildkraut (US.6,292,574) discloses a method for automatically detecting redeye defects. Schildkraut fails to teach “sub-sample the input image to generate a thumbnail image; detecting redeye pixel areas in the thumbnail image, wherein the detecting the computing hardware is operable to perform operations comprising determining measures of pixel redness in the thumbnail image, identifying a first set of candidate redeye pixel areas based on the determined pixel redness measures, identifying a pixel boundary of a pixel region surrounding a given candidate redeye pixel area, classifying pixels within the pixel boundary as red pixels and non-red pixels by applying a threshold to the determined pixel redness measures, and filtering the given candidate redeye pixel area from the first set when a set of contiguous red pixels extends from the given candidate redeye pixel area to the pixel boundary; and, correcting redeye in a version of the input image based on the redeye pixel areas detected in the thumbnail image to produce a corrected version of the input image”. as recited in claim 63, the prior art of record fails to teach either singularly or in combination, fails to anticipate or render the above limitations obvious. Claim 62 has been withdrawn from the rejection and is allowed.

5. Any comments considered necessary by applicant must be submitted on later than the payment of the issue fee and to avoid processing delays should preferably accompany the issue fee. Such submissions should be clearly labeled, comments on statement of reasons for allowance.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Thursday 7.30 - 6.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sheela C Chawan/

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